

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2018/2019

TTP 3121 – TCP/IP PROGRAMMING

(All Sections / Groups)

28 MAY 2019
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 printed pages including cover page with 5 questions only.
2. Attempt **ALL** questions. Marks and the distribution of marks for each question is given.
3. Please write all your answer in the Answer Booklet provided.

Question 1 [10 Marks]

- (a) Briefly explain **TWO** functionalities of the transport layer in TCP/IP Model.
[2 Marks]
- (b) With aid of diagram, depict the three-way handshake of TCP connection.
[4 Marks]
- (c) Using suitable diagrams, briefly explain **TWO** types of client server architecture.
[4 Marks]

Question 2 [10 Marks]

- (a) Briefly outline **THREE** concepts of UNIX signal.
[3 Marks]
- (b) Briefly explain the concept of fork () system call.
[3 Marks]
- (c) Write a simple Python program to illustrate the fork () system call by printing process ID of the parent and child processes.
[4 Marks]

Question 3 [10 Marks]

- (a) Explain **THREE** ways to share information between UNIX processes.
[3 Marks]
- (b) Referring to Figure 1, answer the following:
 - i. Determine the operation and function of the program.
 - ii. Specify the outputs of the program.
[1 + 2 = 3 Marks]

Continued ...

```
1  import os
2
3  def communication(child_writes):
4
5      r, w = os.pipe()
6
7
8      processid = os.fork()
9      if processid:
10
11
12         os.close(w)
13         r = os.fdopen(r)
14         print ("Parent reading")
15         str = r.read()
16         print( "Parent reads =", str)
17         :
18
19         os.close(r)
20         w = os.fdopen(w, 'w')
21         print ("Child writing")
22         w.write(child_writes)
23         print("Child writes = ",child_writes)
24         w.close()
25
26 child_writes = "Hello World"
27 communication(child_writes)
```

Figure 1

- (c) Write the programming steps to lock/unlock a semaphore.

[4 Marks]

Question 4 [10 Marks]

- (a) Briefly explain `setsockopt()` and `getsockopt()` functions. [2 Marks]
- (b) Write simple echo server and echo client programs using TCP sockets whereby the server will simply echo whatever it receives back to the client. [7 Marks]
- (c) Outline the difference between the little-endian byte order and the big-endian byte order. [1 Mark]

Question 5 [10 Marks]

- (a) Outline **TWO** benefits of Remote Procedure Call (RPC). [2 Marks]
- (b) Explain **TWO** reasons why is the connectionless transport service more desirable for supporting RPCs. [2 Marks]
- (c) Write short notes on Blocking I/O model and Non-Blocking I/O model. [6 Marks]

End of Paper